

The taxonomic position of the Australian *Anaplopus tuberculatus*, with a proposed new subfamily (Anaplopinae) of the Tenebrionidae, and including remarks on the family status of the Merycidae (Coleoptera)^{1, 2}

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Dr. G. F. Gross of the South Australian Museum has kindly sent me a very interesting beetle with the following data on the label: "Richmond R., N.S.W., Lea." The specimen turned out to be a female of *Anaplopus tuberculatus* Blackburn, 1890. The genus with its only included species has so far been placed in the Pedilidae of older authors. The family association did not seem right to me and consequently the problem was investigated in detail.

The heteromeroid trochanters coupled with 5-5-4 tarsi in the beetle establish its affinities in the Heteromera. *Anaplopus* could not be placed in the Anthicidae *sensu mihi* for a number of reasons such as the penultimate tarsal segments which are not lobed below and the shape of the pronotum which is not like any Anthicid known to me (Fig. 1). After critically examining the distinguishing features of the families of the Heteromera it appears to me that *Anaplopus* should be placed in the Tenebrionidae and this action will necessitate modification in the definition of the family which, however, seems justified under the circumstances. Like most Tenebrionidae (and unlike *Hydromedion* and *Parahelops*) the front coxal cavities are visibly closed behind. As compared with the Lagriidae, the front coxae are not projecting and the prosternal intercoxal process is relatively wide. Unlike the Alleculidae, the tarsal claws are

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simple. Perhaps the most anomalous character for a Tenebrionid is the lack of connation of the first three visible abdominal sternites even though the suture between the first and second visible sternites is less prominent than elsewhere but is nevertheless distinct. I think that Crowson (1955: 125) is right in making the following statement concerning the Tenebrionidae: "This is by far the largest Cucujoid family, and its members tend to be relatively large insects; on both accounts and from their generally advanced drought-resistant physiology the Tenebrionids are entitled to be regarded as the most highly evolved family of Cucujoidea." It seems to me that the Tenebrionidae should have evolved from a primitive heteromeran type where all the visible abdominal sternites were freely articulated and that the character is preserved in *Anaplopus* and lost in most other Tenebrionids. When the definition of the family is modified to include forms like *Anaplopus* which lack the connation of the first three visible abdominal sternites then we have no difficulty in placing in this family the New Zealand genera *Chalcodrya*, *Philpottia* and *Onysius* hitherto wrongly attributed to the Melandryidae (*vide* Crowson, 1955: 133).

The met-endosternite (Fig. 3) of *Anaplopus* is very interesting indeed. Outside the Cucujoidea one could compare the structure with the Melyrid *Danacaca pallipes* (Cleroidea) but it is highly improbable that this similarity alone could suggest affinities between the two groups. It should be noted that as in *Tribolium* the stalk is rather short and the anterior tendons arise on the lateral arms—characters which seem to be primitive for the Tenebrionidae. The met-endosternite of the Australian *Meryx* is rather similar to *Anaplopus* and I doubt if Crowson (1955: 121) was right in placing the former in a distinct family Merycidae. The 4-4-4 tarsal formula of *Meryx* could be derived from the 5-5-4 formula of most Tenebrionidae. The sub-Cubital fleck in its wings is not necessarily a Colydiid-Mycetophagid character as I recall noticing the structure in *Cryphaeus* when working on the immature stages of a South Indian species (Abdullah, 1964). I have examined a larva of *Meryx* at Glasgow University and can add that the mandible of the larva

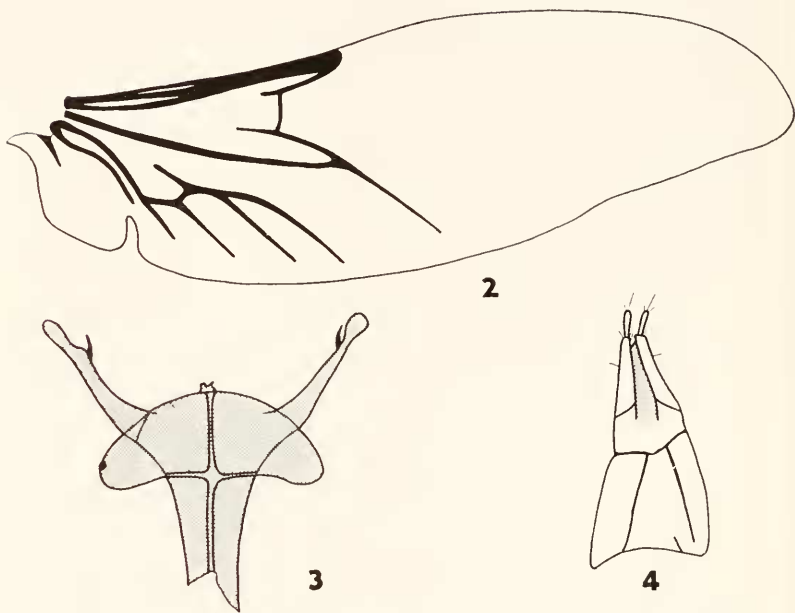


FIG. 1. *Anaplopus tuberculatus* Blackburn, female. One division on the scale = 1 mm. (University of Reading photograph.)

is unlike the Colydiidae-Mycetophagidae. The family Merycidae of Crowson does not seem justified to me.

In the hind wing (FIG. 2) the absence of a radial or anal cell need not be a primitive feature of the Tenebrionidae and may be a reflection of the comparatively small size (about 6 mm) of the beetle. However, the possibility could not be ruled out that in

this feature *Anaplopus* is specialized. Similarly the presence of tubercles on the elytra and pronotum is undoubtedly a derivative feature.



FIGS. 2-4. *Anaplopus tuberculatus* Blackburn, female: 2, hind wing; 3, met-endosternite; 4, ovipositor.

The ovipositor (Fig. 4) is essentially long and tubular but comparatively shorter than in other Tenebrionidae. The coxites are two-segmented as in some other Tenebrionids but most of them have a non-segmented coxite. In the Anthicidae, it could be said with confidence that the presence of two-segmented coxites is a primitive feature which could be traced back to some primitive Pyrochroidae as well. This may very well be the case here in the Tenebrionidae but I am not sure.

The antennae are essentially filiform even though the apical three segments are slightly thickened (Fig. 1). The eyes are convex, lateral and entire, and the width of the head across

them is slightly more than that of pronotum at its widest part. The pronotum is not bordered. In these characters also *Anaplopus* is rather different from most other Tenebrionidae.

It is certain that *Anaplopus* should be transferred from the Anthicidae to the Tenebrionidae where it could not be placed in any of the existing subfamilies. A new subfamily ANAPLOPINAЕ is proposed to receive *Anaplopus* Blackburn, 1890 and its type-species *A. tuberculatus* Blackburn, 1890. The distinguishing feature of the Anaplopiinae is the absence of connation in the first three visible abdominal sternites. It may be possible to divide this subfamily into two or more tribes if some of the New Zealand genera mentioned earlier are found to be quite distinct from *Anaplopus* in the met-endosternite, wing-venation, ovipositor, etc. The larva of *Anaplopus* should also be very useful in understanding the relationships of the Tenebrionidae.

REFERENCES

- ABDULLAH, M. 1964. The immature stages of a South Indian *Cryphaeus* (Coleoptera: Tenebrionidae). Proc. R. ent. Soc. London (A) 39: 153-156.
- CROWSON, R. A. 1955. The natural classification of the families of Coleoptera. viii + 187 pp. London.

Refresher Courses

The Laboratory Branch of the Communicable Disease Center, U. S. Public Health Service, Atlanta, Georgia 30333, has announced a series of courses in special subdivisions of microbiology for the period Aug. 1, 1966-June 30, 1967. There are 28 courses, each of from one to four weeks duration. Further information and application forms may be obtained by writing to the Training Office of the Laboratory Branch.